*Thermochimica Acta*, 207 (1992) 341
Elsevier Science Publishers B.V., Amsterdam



# AUTHOR INDEX

Ba-Issa, A.A. 239
Balabanovich, A.I. 115
Bayol, A. 227
Bonnet, M.C. 227
Bunyan, P.F. 147
Buschmann, H.-J. 329

Carballo, E. 1
Carleer, R. 337
Chattopadhyay, S. 29
Claudy, P. 227
Cleve, E. 329
Comelli, F. 45
Cortabitarte, F. 255
Costa, L. 115
Cuesta-Martos, R. 79

David, G. 131
Davis, M.I. 313
Dominguez-Vera, J.M. 79
Douhéret, G. 313

Ferić, T. 245
Fischman, G.S. 201
Francesconi, R. 45

Gaber, M. 239
Gaponik, P.N. 115
Gibson, J.K. 65
Grejták, F. 209

Haire, R.G. 65
Hercigonja, R.V. 15
Horváth, I. 209

Immelman, E. 161, 177
Irabien, A. 255
Ivashkevich, O.A. 115

Karthikeyan, A.R. 193
King, P.E. 95
Koleva, V. 85
Krajčovič, J. 209
Krstulović, R. 245
Kubranová, M. 209

Lahav, N. 103
Legido, J.L. 1
Lesnikovich, A.I. 115
Létoffé, J.M. 227
Levchik, S.V. 115
Li, J. 219
Ljunggren, L. 23
López, M. 1
Loya, J. 313
Lunelli, B. 45

Mabrouk, H.E. 239
Madhusudanan, P.M. 265
Maneva, M. 85
Martin, J.L. 279
Mathew, B. 265
Maurizot, J.C. 227
Mikhail, S.A. 95
Mohammed Yusuff, K.K. 193
Monti, M. 23
Moreno-Sanchez, J.M. 79
Mullens, J. 337

Nasser, A. 103

Odonde, J.S.O. 305
Ortiz, M.I. 255
Ovadyahu, D. 103

Paz Andrade, M.I. 1
Peleteiro, J. 1
Perić, J. 245

Radak, V.M. 15
Rajasekharan Pillai, V.N. 265
Ravanetti, G.P. 53
Rialdi, G. 23
Romaní, L. 1

Salgado, C. 313
Salla, J.M. 279
Sanderson, R.D. 161, 177
Schneider, H.A. 131
Schollmeyer, E. 329
Shaibi, Y.M. 239
Shuali, U. 103
Simionescu, C.I. 131
Slanina, Z. 9
Srikanth, S. 29

Van Poucke, L.C. 337
Vos, A. 337
Vučak, M. 245

Wang, H.Y. 201
Wang, J. 219

Yariv, S. 103
Yperman, J. 337

Zhang, G. 219
Zini, M. 53

*Thermochimica Acta*, 207 (1992) 343–348
Elsevier Science Publishers B.V., Amsterdam



# SUBJECT INDEX

Acidity
The acidity of dealuminated clinoptilolite investigated by DSC, DTA and TG methods (Grejták et al.) 209
Actinide
High-temperature DTA of transuranium materials with application to the Np–Zr phase diagram (Gibson, Haire) 65
Activation energy
Thermal and spectral studies on Co(II), Ni(II) and Cu(II) complexes of sulfamethazine Schiff base (Gaber et al.) 239
Affinity
Sorption of *n*-hexane in cation-exchanged Y zeolites: chemical affinities and entropies (Hercigonja, Radak) 15
Alkane
Analysis of excess heat capacities of 1-alkanol + *n*-alkane mixtures using the Nitta–Chao model (Peleteiro et al.) 1
Alkanol
Analysis of excess heat capacities of 1-alkanol + *n*-alkane mixtures using the Nitta–Chao model (Peleteiro et al.) 1
Alkoxyethoxyethanol
Ultrasonic speeds and isentropic functions of 2-(2-alkoxyethoxy)ethanol + water at 298.15 K (Douhéret et al.) 313
Alloy
Thermodynamic calculation of phase equilibria in the Al–Ge–Zn system (Srikanth, Chattopadhyay) 29
Aluminium
Thermodynamic calculation of phase equilibria in the Al–Ge–Zn system (Srikanth, Chattopadhyay) 29
Aminotetrazole
Thermal decomposition of aminotetrazoles. Part 1. 5-Aminotetrazole (Levchik et al.) 115
Ammonium hydrogen sulphate
The identification of the mechanism function and the kinetic investigation of the energy-storing reaction of ammonium hydrogen sulfate (Li et al.) 219
Aragonite
The examination of the phase transformation of aragonite into calcite by means of DSC analysis (Perić et al.) 245
ARC
An investigation of the thermal decomposition of poly(3-nitratomethyl-3-methyloxetane) (Bunyan) 147

1-Benzyl-2-phenylbenzimidazole
Thermal decomposition kinetics of mixed ligand complexes of cobaloxime with 1-benzyl-2-phenylbenzimidazole (Mohammed Yusuff, Karthikeyan) 193

Calcite
The examination of the phase transformation of aragonite into calcite by means of DSC analysis (Perić et al.) 245
Calcium hydroxide
Flue gas desulphurization at low temperatures. Thermogravimetric characterization of the reaction product (Cortabitarte et al.) 255
Carbon
Thermochemical studies of the reactions between silicon nitride and carbon (Wang, Fischman) 201
Circular dichroism
Denaturation versus pH of lyzozyme and biosynthetic human growth hormone by differential scanning calorimetry and circular dichroism: a comparative study (Claudy et al.) 227
Clinoptilolite
The acidity of dealuminated clinoptilolite investigated by DSC, DTA and TG methods (Grejták et al.) 209
Cobaloxime
Thermal decomposition kinetics of mixed ligand complexes of cobaloxime with 1-benzyl-2-phenylbenzimidazole (Mohammed Yusuff, Karthikeyan) 193
Cobalt compound
Thermal and spectral studies on Co(II), Ni(II) and Cu(II) complexes of sulfamethazine Schiff base (Gaber et al.) 239
Coordination compound
Thermal decomposition kinetics of mixed ligand complexes of cobaloxime with 1-benzyl-2-phenylbenzimidazole (Mohammed Yusuff, Karthikeyan) 193

Copolymer
Glass temperatures of random copolymers of electron-donor and electron-acceptor monomers (Schneider et al.) 131
Copper compound
Conversion of a hydrogen bonded dinuclear copper(II) complex into a bridged carboxylate related complex by thermal treatment (Dominguez-Vera et al.) 79
Thermal and spectral studies on Co(II), Ni(II) and Cu(II) complexes of sulfamethazine Schiff base (Gaber et al.) 239
Copper oxalate
The decomposition of copper oxalate to metallic copper is well suited for checking the inert working conditions of thermal analysis equipment (Mullens et al.) 337
Cross link
Effect of the nature of crosslinking agents on the thermal decomposition of metal complexes of crosslinked polyacrylamide-supported dithiocarbamates (Mathew et al.) 265
Crown
A new calorimetric titration technique for the study of 2:1 crown ether complexes in solution (Buschmann et al.) 329
Curing
Models of reaction commonly employed in the curing of thermosetting resins (Martin, Salla) 279
Cyclic ether
Excess molar enthalpies and excess molar volumes of binary mixtures containing *p*-xylene + cyclic ethers (Francesconi et al.) 45

Decomposition
An investigation of the thermal decomposition of poly(3-nitratomethyl-3-methyloxetane) (Bunyan) 147
Thermal decomposition kinetics of mixed ligand complexes of cobaloxime with 1-benzyl-2-phenylbenzimidazole (Mohammed Yusuff, Karthikeyan) 193
Effect of the nature of crosslinking agents on the thermal decomposition of metal complexes of crosslinked polyacrylamide-supported dithiocarbamates (Mathew et al.) 265
The decomposition of copper oxalate to metallic copper is well suited for checking the inert working conditions of thermal analysis equipment (Mullens et al.) 337
Degradation
A study on the thermal degradation kinetics of syndiotactic polystyrene by thermogravimetric analysis (Ravanetti, Zini) 53
Dehydration
Thermal analysis study of heat of dehydration of tributylammonium smectites (Yariv et al.) 103
Denaturation
Denaturation versus pH of lyzozyme and biosynthetic human growth hormone by differential scanning calorimetry and circular dichroism: a comparative study (Claudy et al.) 227
Desulphurization
Flue gas desulphurization at low temperatures. Thermogravimetric characterization of the reaction product (Cortabitarte et al.) 255
Deuterate
Thermal and calorimetric investigations of $M(IO_3)_2 \cdot H_2O$ and $M(IO_3)_2 \cdot D_2O$ ($M^{2+}$ = $Ca^{2+}$, $Sr^{2+}$, $Ba^{2+}$) (Maneva, Koleva) 85
Dimer
On temperature increase of the $Mg_2$ mole fraction in saturated magnesium vapour (Slanina) 9
Dithiocarbamates
Effect of the nature of crosslinking agents on the thermal decomposition of metal complexes of crosslinked polyacrylamide-supported dithiocarbamates (Mathew et al.) 265
DSC
Conversion of a hydrogen bonded dinuclear copper(II) complex into a bridged carboxylate related complex by thermal treatment (Dominguez-Vera et al.) 79
Thermal and calorimetric investigations of $M(IO_3)_2 \cdot H_2O$ and $M(IO_3)_2 \cdot D_2O$ ($M^{2+}$ = $Ca^{2+}$, $Sr^{2+}$, $Ba^{2+}$) (Maneva, Koleva) 85
Thermal analysis study of heat of dehydration of tributylammonium smectites (Yariv et al.) 103
Thermal decomposition of aminotetrazoles. Part 1. 5-Aminotetrazole (Levchik et al.) 115
Glass temperatures of random copolymers of electron-donor and electron-acceptor monomers (Schneider et al.) 131
An investigation of the thermal decomposition of poly(3-nitratomethyl-3-methyloxetane) (Bunyan) 147
Thermal analysis of controlled-release elastomeric formulations. Part 1. Determination of the solubility limits of sodium lauryl sulphate in elastomers by differential scanning calorimetry (Immelman, Sanderson) 161
Thermal analysis of controlled-release elastomeric formulations. Part 2. A DSC study of the effect of sodium lauryl sulphate loading on vulcanization (Immelman, Sanderson) 177
The acidity of dealuminated clinoptilolite investigated by DSC, DTA and TG methods (Grejták et al.) 209

Denaturation versus pH of lyzozyme and biosynthetic human growth hormone by differential scanning calorimetry and circular dichroism: a comparative study (Claudy et al.) 227
The examination of the phase transformation of aragonite into calcite by means of DSC analysis (Perić et al.) 245
Models of reaction commonly employed in the curing of thermosetting resins (Martin, Salla) 279

DTA
High-temperature DTA of transuranium materials with application to the Np–Zr phase diagram (Gibson, Haire) 65
Thermal and calorimetric investigations of $M(IO_3)_2 \cdot H_2O$ and $M(IO_3)_2 \cdot D_2O$ ($M^{2+}$ = $Ca^{2+}$, $Sr^{2+}$, $Ba^{2+}$) (Maneva, Koleva) 85
High temperature thermal analysis study of the reaction between magnesium oxide and silica (Mikhail, King) 95
Thermal decomposition of aminotetrazoles. Part 1. 5-Aminotetrazole (Levchik et al.) 115
The acidity of dealuminated clinoptilolite investigated by DSC, DTA and TG methods (Grejták et al.) 209
Thermal and spectral studies on Co(II), Ni(II) and Cu(II) complexes of sulfamethazine Schiff base (Gaber et al.) 239

Dynamic
Models of reaction commonly employed in the curing of thermosetting resins (Martin, Salla) 279

Elastomer
Thermal analysis of controlled-release elastomeric formulations. Part 1. Determination of the solubility limits of sodium lauryl sulphate in elastomers by differential scanning calorimetry (Immelman, Sanderson) 161
Thermal analysis of controlled-release elastomeric formulations. Part 2. A DSC study of the effect of sodium lauryl sulphate loading on vulcanization (Immelman, Sanderson) 177

Entropy
Sorption of *n*-hexane in cation-exchanged Y zeolites: chemical affinities and entropies (Hercigonja, Radak) 15

Equilibrium
Thermodynamic calculation of phase equilibria in the Al–Ge–Zn system (Srikanth, Chattopadhyay) 29

Equipment
The decomposition of copper oxalate to metallic copper is well suited for checking the inert working conditions of thermal analysis equipment (Mullens et al.) 337

Ether
Excess molar enthalpies and excess molar volumes of binary mixtures containing *p*-xylene + cyclic ethers (Francesconi et al.) 45
A new calorimetric titration technique for the study of 2:1 crown ether complexes in solution (Buschmann et al.) 329

Excess molar enthalpy
Excess molar enthalpies and excess molar volumes of binary mixtures containing *p*-xylene + cyclic ethers (Francesconi et al.) 45

Excess molar heat capacity
Analysis of excess heat capacities of 1-alkanol + *n*-alkane mixtures using the Nitta–Chao model (Peleteiro et al.) 1

Excess molar volume
Excess molar enthalpies and excess molar volumes of binary mixtures containing *p*-xylene + cyclic ethers (Francesconi et al.) 45
Ultrasonic speeds and isentropic functions of 2-(2-alkoxyethoxy)ethanol + water at 298.15 K (Douhéret et al.) 313

Faujasite
Sorption of *n*-hexane in cation-exchanged Y zeolites: chemical affinities and entropies (Hercigonja, Radak) 15

Flue gas
Flue gas desulphurization at low temperatures. Thermogravimetric characterization of the reaction product (Cortabitarte et al.) 255

Fuel
High-temperature DTA of transuranium materials with application to the Np–Zr phase diagram (Gibson, Haire) 65

Germanium
Thermodynamic calculation of phase equilibria in the Al–Ge–Zn system (Srikanth, Chattopadhyay) 29

Glass transition
Glass temperatures of random copolymers of electron-donor and electron-acceptor monomers (Schneider et al.) 131

Granulocyte
A comparison of the calorimetric analysis of granulocyte activation by flow and batch systems (Ljunggren et al.) 23

Heat of dehydration
Thermal and calorimetric investigations of $M(IO_3)_2 \cdot H_2O$ and $M(IO_3)_2 \cdot D_2O$ ($M^{2+}$ = $Ca^{2+}$, $Sr^{2+}$, $Ba^{2+}$) (Maneva, Koleva) 85

Hexane
Sorption of *n*-hexane in cation-exchanged Y zeolites: chemical affinities and entropies (Hercigonja, Radak) 15
Human growth hormone
Denaturation versus pH of lyzozyme and biosynthetic human growth hormone by differential scanning calorimetry and circular dichroism: a comparative study (Claudy et al.) 227
Hydrate
Thermal and calorimetric investigations of $M(IO_3)_2 \cdot H_2O$ and $M(IO_3)_2 \cdot D_2O$ ($M^{2+}$ = $Ca^{2+}$, $Sr^{2+}$, $Ba^{2+}$) (Maneva, Koleva) 85
Hydrogen bond
Conversion of a hydrogen bonded dinuclear copper(II) complex into a bridged carboxylate related complex by thermal treatment (Dominguez-Vera et al.) 79

Innovation
A new calorimetric titration technique for the study of 2:1 crown ether complexes in solution (Buschmann et al.) 329
IRS
Conversion of a hydrogen bonded dinuclear copper(II) complex into a bridged carboxylate related complex by thermal treatment (Dominguez-Vera et al.) 79
Isentropic
Ultrasonic speeds and isentropic functions of 2-(2-alkoxyethoxy)ethanol + water at 298.15 K (Douhéret et al.) 313

Kinetics
A study on the thermal degradation kinetics of syndiotactic polystyrene by thermogravimetric analysis (Ravanetti, Zini) 53
An investigation of the thermal decomposition of poly(3-nitratomethyl-3-methyloxetane) (Bunyan) 147
Thermal decomposition kinetics of mixed ligand complexes of cobaloxime with 1-benzyl-2-phenylbenzimidazole (Mohammed Yusuff, Karthikeyan) 193
The identification of the mechanism function and the kinetic investigation of the energy-storing reaction of ammonium hydrogen sulfate (Li et al.) 219
Models of reaction commonly employed in the curing of thermosetting resins (Martin, Salla) 279

Laponite
Thermal analysis study of heat of dehydration of tributylammonium smectites (Yariv et al.) 103

Lyzozyme
Denaturation versus pH of lyzozyme and biosynthetic human growth hormone by differential scanning calorimetry and circular dichroism: a comparative study (Claudy et al.) 227

Magnesium
On temperature increase of the $Mg_2$ mole fraction in saturated magnesium vapour (Slanina) 9
Magnesium oxide
High temperature thermal analysis study of the reaction between magnesium oxide and silica (Mikhail, King) 95
Metabolic activation
A comparison of the calorimetric analysis of granulocyte activation by flow and batch systems (Ljunggren et al.) 23
Metal complex
Effect of the nature of crosslinking agents on the thermal decomposition of metal complexes of crosslinked polyacrylamide-supported dithiocarbamates (Mathew et al.) 265
Model
Analysis of excess heat capacities of 1-alkanol + *n*-alkane mixtures using the Nitta–Chao model (Peleteiro et al.) 1
Thermodynamic calculation of phase equilibria in the Al–Ge–Zn system (Srikanth, Chattopadhyay) 29
Models of reaction commonly employed in the curing of thermosetting resins (Martin, Salla) 279
A new calorimetric titration technique for the study of 2:1 crown ether complexes in solution (Buschmann et al.) 329
Monodeuterate
Thermal and calorimetric investigations of $M(IO_3)_2 \cdot H_2O$ and $M(IO_3)_2 \cdot D_2O$ ($M^{2+}$ = $Ca^{2+}$, $Sr^{2+}$, $Ba^{2+}$) (Maneva, Koleva) 85
Monohydrate
Thermal and calorimetric investigations of $M(IO_3)_2 \cdot H_2O$ and $M(IO_3)_2 \cdot D_2O$ ($M^{2+}$ = $Ca^{2+}$, $Sr^{2+}$, $Ba^{2+}$) (Maneva, Koleva) 85
Monomer
On temperature increase of the $Mg_2$ mole fraction in saturated magnesium vapour (Slanina) 9
Montmorillonite
Thermal analysis study of heat of dehydration of tributylammonium smectites (Yariv et al.) 103

Neptunium
High-temperature DTA of transuranium

materials with application to the Np–Zr phase diagram (Gibson, Haire) 65

Nickel compound
Thermal and spectral studies on Co(II), Ni(II) and Cu(II) complexes of sulfamethazine Schiff base (Gaber et al.) 239

Nitta-Chao
Analysis of excess heat capacities of 1-alkanol + *n*-alkane mixtures using the Nitta–Chao model (Peleteiro et al.) 1

Non-ideal
High-temperature DTA of transuranium materials with application to the Np–Zr phase diagram (Gibson, Haire) 65

Non-isothermal
Models of reaction commonly employed in the curing of thermosetting resins (Martin, Salla) 279

Oxidative burst
A comparison of the calorimetric analysis of granulocyte activation by flow and batch systems (Ljunggren et al.) 23

Phase
Thermodynamic calculation of phase equilibria in the Al–Ge–Zn system (Srikanth, Chattopadhyay) 29
The examination of the phase transformation of aragonite into calcite by means of DSC analysis (Perić et al.) 245

Polymer
A study on the thermal degradation kinetics of syndiotactic polystyrene by thermogravimetric analysis (Ravanetti, Zini) 53
Glass temperatures of random copolymers of electron-donor and electron-acceptor monomers (Schneider et al.) 131
Effect of the nature of crosslinking agents on the thermal decomposition of metal complexes of crosslinked polyacrylamide-supported dithiocarbamates (Mathew et al.) 265

Poly(3-nitratomethyl-3-methyloxetane)
An investigation of the thermal decomposition of poly(3-nitratomethyl-3-methyloxetane) (Bunyan) 147

Resin
Models of reaction commonly employed in the curing of thermosetting resins (Martin, Salla) 279

Schiff base
Thermal and spectral studies on Co(II), Ni(II) and Cu(II) complexes of sulfamethazine Schiff base (Gaber et al.) 239

Scrubbing
Flue gas desulphurization at low temperatures. Thermogravimetric characterization of the reaction product (Cortabitarte et al.) 255

Silica
High temperature thermal analysis study of the reaction between magnesium oxide and silica (Mikhail, King) 95

Silicon nitride
Thermochemical studies of the reactions between silicon nitride and carbon (Wang, Fischman) 201

Smectite
Thermal analysis study of heat of dehydration of tributylammonium smectites (Yariv et al.) 103

Sodium lauryl sulphate
Thermal analysis of controlled-release elastomeric formulations. Part 1. Determination of the solubility limits of sodium lauryl sulphate in elastomers by differential scanning calorimetry (Immelman, Sanderson) 161
Thermal analysis of controlled-release elastomeric formulations. Part 2. A DSC study of the effect of sodium lauryl sulphate loading on vulcanization (Immelman, Sanderson) 177

Solubility
Thermal analysis of controlled-release elastomeric formulations. Part 1. Determination of the solubility limits of sodium lauryl sulphate in elastomers by differential scanning calorimetry (Immelman, Sanderson) 161

Sorption
Sorption of *n*-hexane in cation-exchanged Y zeolites: chemical affinities and entropies (Hercigonja, Radak) 15

Sulphamethazine
Thermal and spectral studies on Co(II), Ni(II) and Cu(II) complexes of sulfamethazine Schiff base (Gaber et al.) 239

Tautomer
Thermal decomposition of aminotetrazoles. Part 1. 5-Aminotetrazole (Levchik et al.) 115

TG
Conversion of a hydrogen bonded dinuclear copper(II) complex into a bridged carboxylate related complex by thermal treatment (Dominguez-Vera et al.) 79
Thermal and calorimetric investigations of $M(IO_3)_2 \cdot H_2O$ and $M(IO_3)_2 \cdot D_2O$ ($M^{2+}$ = $Ca^{2+}$, $Sr^{2+}$, $Ba^{2+}$) (Maneva, Koleva) 85
Thermal analysis study of heat of dehydration of tributylammonium smectites (Yariv et al.) 103

An investigation of the thermal decomposition of poly(3-nitratomethyl-3-methyloxetane) (Bunyan) 147
The acidity of dealuminated clinoptilolite investigated by DSC, DTA and TG methods (Grejták et al.) 209
The identification of the mechanism function and the kinetic investigation of the energy-storing reaction of ammonium hydrogen sulfate (Li et al.) 219

TGA
A study on the thermal degradation kinetics of syndiotactic polystyrene by thermogravimetric analysis (Ravanetti, Zini) 53
Thermal decomposition of aminotetrazoles. Part 1. 5-Aminotetrazole (Levchik et al.) 115
Thermochemical studies of the reactions between silicon nitride and carbon (Wang, Fischman) 201
Flue gas desulphurization at low temperatures. Thermogravimetric characterization of the reaction product (Cortabitarte et al.) 255

Thermosetting
Models of reaction commonly employed in the curing of thermosetting resins (Martin, Salla) 279

Time-domain optimal filtering
Time-domain optimal filtering (Odonde) 305

Titrimetry
A new calorimetric titration technique for the study of 2:1 crown ether complexes in solution (Buschmann et al.) 329

Transuranium fuel
High-temperature DTA of transuranium materials with application to the Np–Zr phase diagram (Gibson, Haire) 65

Tributylammonium smectite
Thermal analysis study of heat of dehydration of tributylammonium smectites (Yariv et al.) 103

TVA
Thermal decomposition of aminotetrazoles. Part 1. 5-Aminotetrazole (Levchik et al.) 115

Vapour
On temperature increase of the $Mg_2$ mole fraction in saturated magnesium vapour (Slanina) 9

Vulcanization
Thermal analysis of controlled-release elastomeric formulations. Part 2. A DSC study of the effect of sodium lauryl sulphate loading on vulcanization (Immelman, Sanderson) 177

XRD
Conversion of a hydrogen bonded dinuclear copper(II) complex into a bridged carboxylate related complex by thermal treatment (Dominguez-Vera et al.) 79
High temperature thermal analysis study of the reaction between magnesium oxide and silica (Mikhail, King) 95
Thermal analysis study of heat of dehydration of tributylammonium smectites (Yariv et al.) 103
Thermochemical studies of the reactions between silicon nitride and carbon (Wang, Fischman) 201
The examination of the phase transformation of aragonite into calcite by means of DSC analysis (Perić et al.) 245

Xylene
Excess molar enthalpies and excess molar volumes of binary mixtures containing *p*-xylene + cyclic ethers (Francesconi et al.) 45

Zeolite
Sorption of *n*-hexane in cation-exchanged Y zeolites: chemical affinities and entropies (Hercigonja, Radak) 15

Zinc
Thermodynamic calculation of phase equilibria in the Al–Ge–Zn system (Srikanth, Chattopadhyay) 29

Zirconium
High-temperature DTA of transuranium materials with application to the Np–Zr phase diagram (Gibson, Haire) 65